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CHAIRMAN'S REPORT FOR 1984 - JOHN KOKWARO

In welcoming you all to our Annual General Meeting, I would particularly like to welcome Mr and Mrs David Burney of the University of Nairobi who will give us a talk after the Meeting.

1984 was a relatively good year for the Natural History Society, bearing in mind that much of the work is done by volunteers. The monthly evening meetings were well attended when the subjects selected were popular with members. Mrs Fleur Ng'weno's Wednesday morning bird walks were as popular as ever. However, the Sunday morning 'pot luck' excursions on the second Sunday of each month were not so well patronised. Members are reminded that they are organised on a regular basis - so please support them. There were several camping trips during the year, which were well supported.

The Society's publications included a Journal part No.180 "The Habits and Breeding Biology of the Great Blue Turaco", by Mhorag Candy. The Ornithological Sub-Committee issued *Scopus* regularly and also produced the Annual Bird Report Six issues of the *Bulletin*, edited by Mrs D. Backhurst, were produced, with some delays caused by a faulty duplicating machine.

Two important books were published by the Society: First, *Birds of Somalia* by J.S. Ash and J.E. Miskell, Scopus Supplement No.1 and secondly, *The Sedges and Rushes of East Africa* printed in Norway with generous help from NORAD. Both books are available to Members at reduced cost from the Society Office.

The Library, jointly owned by both our Society and the National Museums of Kenya, has been open regularly. The experiment of opening during the lunch hour has not been well supported by members, who should try to make more use of these facilities.

Dr Adrian Lewis is asked to present the Treasurer's report on behalf of Dr S. Njuguna the Hon. Treasurer. In future our accounts may be audited a month later than heretofore as March is the busiest month for all chartered accountants so - as a result, future Annual General Meetings will be held in April of each year.

I would like to thank the following people who have assisted me in running the Society's affairs throughout the year: Mrs Barbara Bryan and Miss Flora Buyu who shared the heavy duties of the Hon. Secretary. Since Mrs Bryan's departure from Kenya Miss Buyu has been our acting Hon.Secretary. My sincere thanks to the following regular volunteers who have assisted Miss Buyu in various capacities and who have so willingly helped and advised her on routine office matters: Miss Priscilla Allen, Mrs Daphne Backhurst, Mrs Hilary Fletcher, Miss Heidi Schulthess, Mrs Katie Smalley and Miss Yolande Williams. In the Executive Committee, I am grateful to my vice Chairman Dr Adrian Lewis, the Hon Treasurer Dr Stephen Njuguna, the Hon. Joint Editors Drs Jim Hebrard and David Widdowson, the Hon Librarian Miss Priscilla Allen and the Functions Organiser Dr Graham Reid. Our relationship with the National Museum in 1984 was excellent. The Society received more furniture from the Museum, and this has enabled us to hold the Executive Committee meetings in the Society office from November 1984. We also continued to use the Museum Lecture Hall and Board room for our activities, and for these, I thank the Museum Director Mr Richard Leakey.

I would like to conclude by thanking all members of the Society for their continued support, and would kindly request those who are domiciled in the Nairobi area to continue offering their voluntary services at the office whenever possible. Please attend our monthly evening lectures regularly, and also contact our Functions Organiser should you have any talk or trip you would like us to include in our programme.

LAKE MAGADI

Magadi is the Kiswahili word for soda, adopted from the Maasai language. Ninety kilometres south-west of Nairobi is the largest of the East African alkaline lakes that have been named Magadi. (The other well-known one is inside Ngorongoro Crater.) Just to the south of Magadi lies the largest of the soda lakes, Lake Natron, the main breeding site of the flamingoes in East Africa.

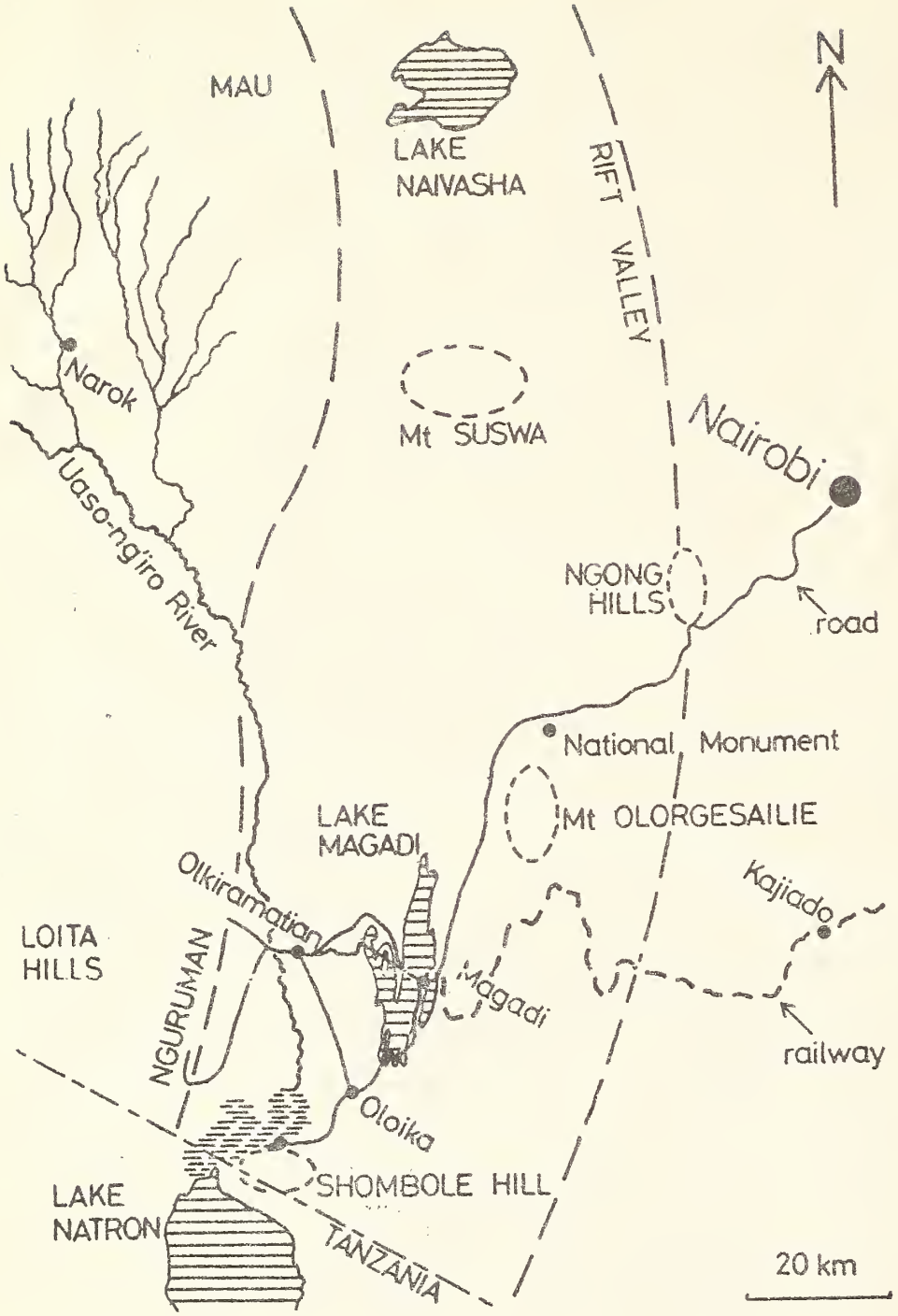
Excepting the Suguta Valley and Lake Logipi in the north, Lake Magadi has collected at the lowest point in the Kenyan section of the Rift Valley. At 600 metres altitude the climate is hot, and evaporation from the lake proceeds at a rate approaching 10 mm per day. Local rainfall, however, is only about 500 mm per year. Inflow of water is provided partly by ephemeral streams carrying the run-off of rainstorms falling further north, but mainly by hot springs that both enter the lake around its margins and well up from below. The sources of the spring water are not well understood. It has been postulated that there is circulation between the lake and a deep aquifer to explain why the lake water never becomes saturated with common salt. The ground water reservoir may be topped up by percolation from outside the catchment area, and may possibly be receiving the underground outflow from Lake Naivasha to the north.

The topography of the Rift Valley floor around Lake Magadi is composed of ridges of lava interspersed with flat plains. The ejecta of now-dormant volcanoes in the area, chiefly Mounts Suswa and Olorgesailie, has included large quantities of alkaline soda ash. (In 1966 there was an eruption of Ol Doinyo Lengai to the south of Lake Natron that covered the neighbourhood with a blanket of ash like snow, but no lava was produced.) The geological structure of this section of the Rift Valley, therefore, includes large quantities of sodium salts, chiefly carbonates, both at great depths and in more superficial strata. These salts are soluble in water and are leached from surface outcrops and deeper structures alike by the water flowing towards Lake Magadi. Indeed, the solubility of underground material may have allowed the evolution of the subterranean channels through which the lake is presumably supplied with its water today.

Most of the water flowing into the lake arrives as a more or less concentrated solution of salts. The salts are further concentrated by evaporation, so that the bulk of the lake now consists of a fifteen to thirty metre thick layer of 'trona', a mixture of sodium salts, silt and organic material. Much of the time, especially in the eastern part of the lake, there may be no surface water at all, only a rough crust of soda, either white or coloured pale pink by algae that grow in it; but after heavy rain the upper layer of soda dissolves and a beautiful lake appears.

To the great convenience of the visitor there is a tarmac road from Nairobi to Lake Magadi. The road was built not for tourism, but to serve the Magadi Soda Company, formed in 1911 to extract the minerals from the lake deposits. Following the completion in 1913 of a precipitous railway from the main Nairobi-Mombasa line to the lake, a factory was built on a headland of the eastern shore. Processing and export of sodium carbonate for use in glass manufacture began in 1919, and the company has recently expanded production from 200 000 to 300 000 tons annually. Present production earns for Kenya $15 million per year, the export of soda ash being about fifth in the rank of Kenya's foreign-exchange earning industries. There is enough soda in the lake to sustain such a level of offtake for well over 100 years. Nevertheless, it appears that the inflow of soda to the lake over the last 60 years has at least been as great as the rate of extraction: i.e. there has been no depletion of the soda to date. In addition to soda ash the company also produces 40 000 tons annually of sodium chloride, common salt, enough to satisfy over half of Kenya's requirements.

The road to Magadi from Nairobi passes the western end of Nairobi National Park and goes over the southern shoulder of the Ngong Hills. From there it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Nairobi
Uaso-ngiro River
NGONG
HILLS
road
National Monument
Mt OLORGESAILIE
LAKE
MAGADI
Olkiramatian
Kajiado
LOITA
HILLS
NGURUMAN
Magadi
railway
Oloika
SHOMBOLE HILL
LAKE
NATRON
TANZANIA
20 km

drops fairly rapidly in a series of steps until at about the mid-point of the journey it passes close to the National Monument of Olorgesailie. This is a site where some of our ancestors interacted with a primeval fauna on the shores of an ancient lake a half a million years ago. It is well worth a visit. The road then skirts to the west of Mount Olorgesailie and proceeds through a landscape of rocks and sparse thorn-bush down to the lake, then across to the settlement of Magadi on a short causeway between salt-evaporation pans. From the town a gravel road continues southwards providing access to parts of the lake shore for those who prefer to treat their vehicles kindly. This road passes by the excellent gravel airstrip, which is a choice destination for a joy-ride by light aircraft. The lake and its environs offer an even grander visual feast from the air than from ground level.

Thirty kilometres to the west of the lake the Nguruman Escarpment forms the eastern face of the Loita Hills. The soda company have piped their water supply from fresh springs in the hills to the factory, and have also provided water supplies to several Maasai settlements in the area. From the factory a track follows the route of the pipeline westwards across four successive arms of the lake on a causeway built on top of the soda. There is a steep and sometimes rough climb up from the western shore. An alternative and more level route loops to the north on a low ridge after the first section of the causeway, and rejoins the pipeline road a few kilometres west of the lake at the trading centre of Olkiramatian.

Continuing westwards from Olkiramatian the road crosses a bridge over the Uaso-ng'iro River and the track then branches, south to climb up on a step of the Nguruman, or north to a small irrigation scheme around some springs at the base of the escarpment. The country along the Uaso-ng'iro is open park-like woodland of mainly *Acacia tortilis* trees, and looks very attractive whether the ground beneath is of talcum-powder-like dust, or green like a lawn with a fresh flush of grass and wild flowers. A wide choice of idyllic camping sites can be found along the riverbanks.

The Uaso-ng'iro is a permanent and sometimes substantial river that rises in the highlands of the Mau in the north of Narok District, and loses itself in a large fresh-water marsh near the Tanzanian border to the south of Olkiramatian. Most of this marsh is choked with vegetation and it is difficult to approach because the shores are wide, muddy and densely vegetated. Some areas of open water can be seen from the air and there are patches of open shoreline on the southern side near the small shopping centre called Shombole. At present the marsh has contracted considerably after several relatively dry years but periodically, when the water level rises sufficiently, the marsh overflows into Lake Natron. A track from Olkiramatian leads southwards to Oloika, where it joins the larger track from the soda factory via the eastern shore of Lake Magali to Shombole. To the west of Shombole the track peters out under the western slopes of Shombole Hill which can be climbed for a superb view of Lake Natron.

The area that has been described includes a great variety of scenery, but is not outstanding for mammalian wildlife. This is partly because it is arid for much of the year, partly because there is a considerable excess of domestic livestock, and partly because a formerly substantial population, particularly of Burchell's zebra, was all but eradicated during the poaching era of the mid-70's. The situation has, however, improved in recent years, and a variety of species may be found between Olkiramatian and Shombole, including Burchell's zebra, Maasai giraffe, eland, oryx, Grant's and Thomson's gazelle, impala, gerenuk, wildebeest and buffalo. There are klipspringers and rock hyraxes on many of the small escarpments in the area, and, at least if one explores on foot, it is fairly easy to find bat-eared foxes.

For the bird-watcher the variety of habitat offers considerable scope and it is difficult to recommend any one area in particular. For wading birds the western and southern fingers of the lake are the best, as they generally have areas of open water containing a dense flora of micro-organisms. Flamingoes are generally

present in small numbers. The particular item of interest is the tiny chestnut-banded sandplover, or Magadi plover, whose range is virtually restricted to the shores of Lakes Magadi and Natron.

Another species of special interest in Lake Magadi is a fish, *Oreochromis alcalica grahami* that can be found in the hot alkaline water of the springs around the shore. While it has adapted to extremes of heat, salinity and alkalinity, this species can also survive in the cooler and almost fresh water that sometimes inundates the lake after heavy rain.

Access from Magadi to other areas is limited. There is a rough track from south of Mount Olorgesailie to Kajiado, largely following the route of the railway. A faint track to the south has been unused for some years and is probably not now motorable but was formerly used for visits from Kenya to Lake Natron and Ol Doinyo Lengai. An extremely difficult track to the west leads up the Nguruman Escarpment into the Loita Hills, but is frequently blocked by fallen trees in the forest section at the top. There is no tourist accommodation of any type except for the self-help bandas at Olergesailie, therefore visitors must be self-contained. The Magadi Soda Company controls a large area of concession around the lake, and all the land up to the foot of the Nguruman Escarpment is Kajiada County Council Trust Land. Visitors are welcome so long as they cause no disturbance to the company, the local Maasai population or the animals and vegetation that inhabit this ecologically rather fragile zone.

Jim Crees, Box 1036, Mogadishu, Somalia.

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TWO BOTANICAL NOTES

1. Over the years, I have seen most *Elaeodendron buchananii* trees in the Nairobi area with bark stripped off, and have been told that the bark is used for soup and as medicine. What I could not understand was that in several cases the bark was stripped off right round the tree trunk, thus girdling or ring-barking the tree. Normally, when a tree is ring-barked or girdled, food made by the leaves can no longer be carried down to the roots, and the tree dies. It did not seem logical that people would destroy so carelessly a tree on which they depended for spices and medicine.

In June, while looking for birds along Forest Edge Road with Hector Gomez de Silva, we noticed an *Elaeodendron* tree which seemed completely ring-barked, but still had young green leaves.

The bark seemed to have been removed some time ago, and from the healthy bark above and below the cuts, a thin layer of brown material had spread to heal part of the wound. Thus it appears that *Elaeodendron* has the capacity to regrow inner bark along its trunk, even when the cuts girdle the tree, as long as the distance between the bits of healthy bark that are left is not too great.

Mr Tim Noad said he had also noticed this. We did not have time to study how the inner bark regenerates. Do other observers have further information?

2. The blood lily *Cyrtanthus sanguineus* was in bloom along the main park road near the Ostrich Gate of Nairobi National Park in late June 1985. We saw more than a dozen blood-red blossoms on the Wednesday morning birdwalk on June 26, 1985. This beautiful flower seems to bloom erratically.

Fleur Ng'weno, Box 42271, Nairobi.

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THE CHALBI DESERT: FROM LAKE TO DESERT?

The Chalbi desert is one of the driest parts of Kenya; North Horr, on the northern margin of the desert, has a mean annual rainfall of 153 mm. The actual rain falling in any one year is very variable; for example, in 1973 only 7,2 mm were recorded at North Horr, contrasting with 362 mm in 1977. During wet years, quite a lot of water flows through intermittent streams (lagas) into the Chalbi desert and forms a wide shallow lake, which may persist for several months before it dries up. However, for most of the time, the Chalbi desert is a bare, dry surface of mud and salt.

The purpose of my research is to look for evidence of different (in particular moister) environmental conditions in the past. Many of the lakes of Africa have at times been considerably larger, deeper and fresher than they are today. This is true for example of Lake Turkana, Lake Naivasha, Lake Nakuru and the lakes in the Ethiopian Rift Valley, as well as of Lake Chad in the Sahara. One of the humid periods recorded in all these lake basins was between 9 and 11 thousand years ago. So one of the objectives of my research in the Chalbi basin is to see whether there might be evidence of this 9 - 11 thousand year old humid period in this basin also; was there a permanent fresh-water "Lake Chalbi" at that time?

The evidence that I look for include features that might be former lake shoreline cliffs; concave notches that might have been formed by wave erosion at the water level of a large Lake Chalbi. It was tempting to identify the lava cliffs that surround the desert as former lake shorelines, but on closer inspection this proved to be untenable. One reason for this is that the lava cliffs lie at a wide range of different altitudes above sea-level, while lake shoreline should be very close to horizontal. Also, no sign of well-rounded beach gravels along the bases of any of the cliffs was found. Evidence also includes sediments that might have been laid down in the waters of a lake. Various sediments underlie the lavas that surround the basin, showing that the sediments are older than the lavas. Some of these sediments contain fossil wood that is from plant genera that indicate a tropical forest or woodland environment. This wood was found in an area which today has dry thorn scrub vegetation, so the indication is that at the time the wood was living, conditions in the area were considerably moister than they are today. We do not have an exact age for this wood, but it has been estimated as "Mio-Pliocene" which could be somewhere around 7 million years.

Other sediments underlying lava contain fossil bone, including the bones of Nile perch, catfish, crocodiles and tortoises. The size of the Nile perch bones indicates that there must have been a large, deep body of water in existence. The lava that overlies these bones has been dated by Potassium-Argon dating to about 2.5 million years, so the bones from underlying sediments should be slightly older than this. Other sediments underlying lavas include greenish clays and red sandstones. There are probably sediments of several different ages represented in this area and we are far from being able to establish a stratigraphic sequence.

Much younger sediments also occur in the Chalbi basin; among the most interesting of these are silts that contain well-preserved shells of fresh-water snails, most notably *Melanoides tuberculata*. At present these snails live in environments similar to Mzima Springs, with a continuous flow of fresh water. They do not exist in the modern Chalbi basin, and their presence in these sediments is an indication of more humid conditions in the past. Four collections of these snails were dated by the radiocarbon method, and gave ages in the range 9 500 to 11 000 years before the present. These dates agree very well with those from other lake basins, mentioned above. Other sediments from the Chalbi basin have proved difficult to identify, in particular, white or pale grey carbonate rock with few clearly defined structures which forms low hills and ridges on the desert margins. Some of these rocks may consist of deeply weathered basalt lava; others may be lake marls that have been subject to

intensive alteration since they were formed.

There is also sand in the Chalbi basin; some occurs in dipping layers that form part of eroded ridges that could be former beach ridges. Other sand is at present undergoing transportation by the wind; the most spectacular features that result from this are two perfectly shaped crescentic (Barchan) dunes that lie to the north of North Horr and are steadily moving north-westwards, blown by the prevailing south-easterly winds.

To summarize; what have I learned so far about past environments in the Chalbi basin? There seem to have been at least two moist periods; the older one can be traced back as far as 2.5 million years, before Mount Marsabit was erupted. During this period there was a large body of water (its precise size, depth and boundaries remain unknown) in which there was a substantial fresh water fauna including large Nile perch.

After this body of water existed, the landforms of this part of northern Kenya were drastically changed by the eruptions of volcanic rock and possibly also by faulting and down-warping. Eventually the modern Chalbi basin came into existence, an elongated depression surrounded by lava uplands. Between 9 to 11 thousand years ago, conditions in this basin were considerably moister than they are today. Fresh-water snails were flourishing in several places around the basin margins. These localities may have been part of a single 'Lake Chalbi', but this seems rather unlikely, as we have so little other evidence for the existence of such a lake. More likely, there were a number of springs around the basin margins that fed fresh-water pools and swampy areas. During this moist period, however, it is probable that the floor of the Chalbi basin was flooded with water more frequently, and for longer, than it is today. A fuller answer to this question depends on analysing the sediments that lie below the mud of the modern basin floor. If a core could be taken through the basin sediments, it should provide evidence of possible former episodes of lacustrine sedimentation.

Celia Nyamweru, Department of Geography, Kenyatta University College.

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AFRICAN JACANA CARRIES YOUNG IN UGANDA

Hopcraft (1968) described chick-carrying by the Africa Jacana *Actophilornis africanus* in Kenya, apparently the first published record for East Africa. Recently, Frame (1983) described a Blacksmith Plover *Vanellus armatus* carrying four young simultaneously in its breast feathers. The scarcity of published reports of chick transport by adults in Africa and elsewhere seem to indicate that it is not often observed.

The last week in December, 1958, we observed and filmed an African Jacana carrying its young beneath the wings. Our observations were in the morning hours along a road that intersects at a T-junction the road running directly west towards the Katwe entrance to Queen Elizabeth National Park. At this corner there was at that time a rather extensive swamp on both sides of the road, but this has largely dried up. In 1958 it was a heavily used buffalo wallow with a central shallow pond containing emergent and floating vegetation. It was then common to see Marsh Harriers and various kinds of wading birds there. Two Jacanas were present when we came to film the animal life at the pond. One Jacana, believed to be the male, would stray into the thick marginal vegetation beyond the pond while its mate remained out on the pond lilies, where it was being filmed with our 16 mm Bolex cine camera. The male suddenly appeared near the water's edge walking away from us with a pair of legs dangling from under one wing and three pairs from under the other. Then it disappeared into

the vegetation and soon returned alone. We determined to capture this chick carrying behaviour and soon succeeded, one person very slowly advancing toward the area where the bird had gone while the other person remained behind the camera. We shot a sequence of the male squatting with the wings partly spread and then standing erect and walking off with the young tucked away under the wings, except for the gangly feet in full view.

At that time we believed this behaviour unusual. When showing our film *Jambo* on East Africa, which included footage of the jacanas, we asked many people including ornithologists, but no one had ever heard of its occurence. Dr Alden H. Miller of the Museum of Vertebrate Zoology, University of California, was unable to supply information about this behaviour involving the New World jacanas *Jacana spinosa*. Dr Gerald Collier of San Diego State University replied in 1960 to an inquiry of ours that the Pheasant-winged Jacana *Hydrophasianus chirurgus* of Asia is known to carry its young. He also recalled that there were reports in the popular literature of South Africa of African Jacanas carrying young. Van Tyne and Berger (1976) mention that the Australian Lotus Bird *Iridipaira gallinacea* carries young under its wings. Alverez del Toro (1971) reports that the American Finfoot *Heliornithis* is able to fly while carrying its young in two brood pouches on the sides of the breast.

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AUTHOR'S NOTE: The word "jacana" is properly spelled with a cedilla beneath the c, thus producing a soft "s" rather than a hard "k", being of Spanish, or actually of Carib origin. Thus "zjhasahna" would be the most accurate pronunciation and not "jack-ana" as is sometimes heard.

John D. Goodman and Jeanne M. Goodman, Dept. Zoology, Box 7062, Kampala.

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LARGER MAMMALS AROUND KAJIADO

LARGE HERBIVORES

Kajiado is at the south end of the Athi-Kaputiei plains which used to be famous for their abundant wildlife. In the ten years since I first went to live in Kajiado the numbers of animals have declined noticably. The Veterinary Officer who was in Kajiado when I first arrived, Dr Rudi Eugster, told me that in the six years he had been there the "plains game" had greatly decreased. Thus the decline apparently dates back to 1970 or earlier.

The commonest antelope are Thomson's and Grant's gazelle, with impala and eland in better wooded areas. Large herds of zebra, wildebeeste and hartebeeste used to be common especially after the rains, and were quite a hazard when driving at night. Giraffe are usually discretely hidden in riverine bush, but sometimes come out onto the plains to browse on the tops of the rather stunted bushes of *Acacia drepanolobium*.

Dikdik are still abundant in the riverine bush, as can be seen by their numerous latrines of tiny pellets looking like heaps of seeds. The animals can be seen in the early morning and late evening but seem to be invisible at other times. Warthog are also present, but very shy.

On the hills south and east of Kajiado mountain reedbuck are quite common and klipspringer can occasionally be seen. Hyrax are also locally abundant in rocky sites.

In the drought of 1976 the antelopes were starving and became very bold, grazing right up to the windows of the houses. At this time I saw gerenuk and oryx in the bush quite near the town, both dry-country species not usually present, and which were not seen again after the drought broke.

During the wet years following the drought bush duiker suddenly became rather common in the shambas near the railway "lines". They later disappeared again.

LARGE CARNIVORES

The dominant large carnivores in Kajiado are undoubtedly the spotted hyaenas. Their whooping calls can be heard on most nights. Their latrines are easy to recognise because the large dog-like faeces left lying uncovered on the surface are chalky white from the bones they eat. Their headquarters is in the municipal cemetery (next door to the District Hospital - very encouraging for the patients!) but they scavenge all through the town and are blamed for killing dogs and small livestock.

Striped hyaenas are also present, though rarely seen. Unlike the spotted hyaenas, they live alone or in pairs, and hunt silently.

Lions are hardly known these days from anywhere nearer than Selengai, but leopard are occasionally reported, and I have seen cheetahs several times. These sometimes kill goats, and are therefore unpopular.

I have never seen a ratel in Kajiado, but have had good descriptions of them from harrassed poultry-keeping missionaries. I once found ratel tracks right outside my front gate, and a burrow with ratel-like hairs round it in the valley below, but the animal itself was elusive. Civets are also present, but I have only ever seen one as a very squashed road kill.

SMALL CARNIVORES

Side-striped jackals can often be seen in the evening, especially in the open grassland around the airstrip, hunting in pairs or in family groups.

Packs of pygmy mongoose are common, especially in the bush along stream beds. They call repeatedly, apparently to keep the pack together. The call is a sharp, scolding "yang" which is very hard to locate. They are wary, and keep together in deep cover. By contrast, the slender mongoose seems always to hunt alone.

Most of the other small carnivores are nocturnal. White-tailed mongoose are common, small-spotted genets and bat-eared foxes rather less common. I once saw a wild cat, but could not be sure of the species.

The zorilla is not often seen. Once when driving late at night in a torrent of rain I came across one carrying a youngster almost as big as herself, presumably escaping from a flooded burrow. Normally they carry their heads and tails low to the ground, but this one had her head reared right back to hold the curled-up youngster clear of the ground, and to balance herself was holding her tail right up in the air as well. The only time I saw a zorilla in daylight my dog killed it, releasing a foul and penetrating stink which clung to him for days.

TERMITE EATERS

The aardvark is notable for its antisocial habit of digging deep holes in the surface of dirt roads. The animal has proved very useful to me in my work, as it can locate termite nests of which there is no trace on the surface. For instance, it can go straight down through 70-100 cm of undisturbed soil onto a nest chamber of *Hodotermes mossambicus* (the harvester termite), which otherwise I would never have found. Its burrows usually show the parallel, longitudinal grooves made by its spatulate claws as it rakes at the side of the hole. (A warthog burrow, which is similar in size, shows transverse grooves on the walls made by its tusks.) The aardvark's faeces are pellets about the size of a walnut which are buried in the loose soil outside the burrow or scrape. Despite its obvious interest in termites, the faeces usually seem to be full of the cuticle of ants, especially Dorylines (related to the safari ant, but these live underground). The aardvark is strictly nocturnal and rarely seen.

The aardwolf is probably less common, but is less shy and so more often seen. Its faeces, like those of a very small dog, are deposited uncovered in latrines, usually on the bare soil of a very old termite mound. They are stuffed with the tiny pear-shaped capsules (in two sizes) of the soldiers of *Trinervitermes* (the snouted harvester termite) upon which it seems to feed almost exclusively. I wonder how it can find enough to live on, since this is not an abundant termite in the area. The aardwolf feeds on foraging termites which it licks up from the soil surface with its broad sticky tongue (vide Alan Root's film *Castles of Clay*).

One other termite-eater leaves neat latrines of larger dog-like faeces full of head capsules of the abundant mound-building termite *Macrotermes michaelseni*. It is most frustrating that I have never been able to pin down the owners of these latrines, but civets are a possibility. (If anyone knows the answer I should be delighted to hear from them!)

PRIMATES

Apart from man, the primates are poorly represented in Kajiado. There are baboons on the cliffs that mark the edge of the Kapiti Phonolite a few Km west of the town, most easily accessible at the site of the old quarry. Others live on the hills further away.

I have only twice seen vervet monkeys, in each case a small troup following the strip of trees and bushes along a river bank. One was near Kajiado town, the other at Bissel 22 Km to the south. This area seems to be very marginal habitat for them

Our only common primates are bush-babies (lesser galagos) which are common in the trees along river beds, but can only be seen late at night with torches. (Care should be exercised on such expeditions, as it occasionally happens that one's intentions are mistaken by the local people.)

Jo Darlington, c/o Sections of Entomology, National Museums of Kenya.

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TWO RECORD SIZE BLANDING'S TREE SNAKES FROM UGANDA

Pitman (197) says of Blanding's Tree Snake *Boiga blandingii* that they may reach 9 feet (274.3 cm) and that 8 foot (243.8 cm) snakes are not rare. However, the maximum sizes that he records are as follows - Uganda: 7 ft. 4 in. (223.5 cm) and 6 ft. 2½ in. (187.3 cm); 182.9 cm and 148.0 cm; Kenya: 243.8 cm; Zaire: 218.0 cm.. Although it is unquestionable that larger specimens occur, these may sometimes be based on 'guestimates' and incorrect measurements (dead snakes can be stretched for many mm to gain a maximum length and skinned snakes can be stretched to over one third longer, as examples). In several years of collecting around Kampala in the 1960's I never collected any *B. blandingii* reaching even seven feet (213.4 cm).

On May 9 and 10 two snakes were brought on poles to Katalemwa from the neighbouring village of Komamboga at Km 11 north of Kampala. Both were female *B. blandingii*; one was 7 ft. 7 in. (231.2 cm) and the other was 8 ft. 3 in. (251.5 cm). Both were a rather dingy olive-brown colour that at first made me think they had somehow found two large black mambas *Dendroaspis polylepis*, out of range here. The smaller of the two (if that is an apt description of such immense snakes) died a day or two later, probably from rough handling during capture, both snakes having tight ropes around their middle body and had been carried that way for some distance. It was examined externally and found to be heavily infested with dozens of ticks, probably *Aponomma* sp. (not yet identified) and internally with linguatulid worms ("tongue worms") in the posterior saccular lung cavity.

To my knowledge, no study has been made of the venom of *B.blandingii* and its possible toxicity to humans; however, I treat this snake as if it WERE a black mamba,

which I first thought it was, though it is totally docile. One tends to be at least apprehensive about the serious consequences from their bite. The only recorded Uganda bite was from a very small specimen of approximately 3.5 cm and there were no serious symptoms, only a slight amount of pain and smarting; however, this is not to be taken as evidence that these snakes are therefore entirely or relatively non-venomous when perhaps the exact opposite may actually be the case. Their fangs are at the rear end of the maxillary row and are not particularly large; however, the front maxillary teeth and the teeth in the roof of the mouth along the palatine row are very large and recurved, and being large snakes their jaws are powerful. Mistakenly, I placed the handle of my capture stick near the mouth of one of them, which it grasped and chewed and I had considerable difficulty in removing it, the snake showing no interest in releasing it. This sobering fact made me decide to be very cautious at all times with this huge reptile.

John D Goodman, Dept. of Zoology, Makerere University, Box 7062, Kampala.

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NOTES FROM SOUTH-EAST KENYA

During an evening drive in Amboseli, we were lucky to see a pair of adult Rhino - made conspicuous by their attendant cattle egrets - dozing on a mound in a reed bed. As we viewed them through binoculars, we gradually became aware of several indeterminate brown shapes in our field of vision sticking up out of the reeds 20 metres or so beyond the somnolent rhinos. After further bewildered scrutiny, it became obvious that these enigmatic objects were, in fact, the heads of lionesses and young lion. We counted eight of them. While we watched, two of the lions slinked forward on their bellies. But they were perfunctory in their movements and positioning: they were not actually stalking, as they had their ears erect, also they made no attempt to conceal themselves. As they sat in the long grass, they continually looked about them, casually. We assumed that they were playing/practicing hunting in formation with the rhinos as the target 'prey'. Two cub members of the pride lay behind a nearby bush watching the proceedings. The rhinos dozed on oblivious of the attention they had inadvertantly attracted.

Another interesting incident, the following day, involved a pair of tawny eagles *Aquila rapax* and a pair of kori bustards *Otis kori*. The bustards were feeding in long grass and the tawny eagles were standing nearby. Suddenly, one of the tawny eagles flew up and glided low in the direction of the male bustard, alighting about two metres from him. This immediately provoked a courtship display in the bustard - ruffling of neck feathers, fanning of tail across the back, wings half spread. Is the threat display of the kori bustard identical to the courtship display?

On Saturday 25 May, on one of our regular tours of the Shimba Hills National Reserve, we stopped at Giriama Point which affords a breathtaking view of the South coast, lying some 15 kilometres below. While looking out across the falling hills and coastal plain, our attention was distracted by the approach of a large flock of birds moving from the south along the coastline. They came within 1.5 kilometres of us, so that, through binoculars, we could see their stork-like outline - long necks extended in flight. They seemd entirely black, at least no white was distinguishable, but this may not have been visible due to the great distance. They numbered between 300 and 400. We watched the flock slowly twist and spiral northwards towards Mombasa. Were these Abdim's storks *Ciconia abdimii* on their transequatorial migration to

their breeding grounds? The size of the flock and their spiralling flight suggest that they were. Perhaps someone else saw them more closely?

Carol Reid and Colin Ryall, Box 88692, Mombasa.

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NOTES FROM NORTH-WEST KENYA, NAKURU AND MASAI MARA

Two Hooded Vultures *Neophron monachus* were resting in a tree near the Olare Onyonkie River bridge on the road from Eldoret to Kapsabet on 28 March 1985. The vultures were being scolded and mobbed by a Lilac-breasted Roller *Coracias caudata* with a Broad-billed Roller *Eurystomus glaucurus* and flew off toward the east being chased by the rollers. The common scavenger of the Eldoret area is the Marabou *Leptoptilos crumeniferus*. The common scavengers of the AUEA area, 6 km north of Kapsabet, are the Yellow-billed Kites *Milvus migrans parasitus*. I have identified 255 species of birds in the AUEA area in the last five years but have not seen a vulture or a Marabou..

Mount Elgon National Park: Lammergeyer *Gypaetus barbatus* were sighted soaring over the caldera of Mt. Elgon on 3 March 1985 by Karsten Otte, a German ornithologist, during a nine day stay on the top of the mountain. Lammergeyer may be nesting on the cliffs where the Suam River leaves the caldera.

Red-winged Starlings *Onychognathus morio* were nesting in a petrified wood mould about 5.5 metres up the bare rock face to the left of the opening of Makingeny Cave on 17 February 1985. Both parents were feeding the one black fuzzy pullus. Food consisted of insects and light pinkish-cream berries about 8 mm in diameter. On 2 March 1985 the nest was empty but the adults were still visiting it. The nest was made of fine roots and the shiny black stipes of a maidenhair fern, probably *Adiantum thalictroides*. No mud stiffening was used in the nest as described in Mackworth-Praed & Grant.

What appeared to be a leopard kill of a bushbuck from around the time of 13 February 1985 had left the rocks at the left of the Makingeny Cave and behind the waterfall covered with blood. One leg was left as evidence.

A Crowned Eagle *Stephanoaetus coronatus* sat on a dead snag by the road just southeast of Kitum Cave on the morning of 2 March 1985. Something was crying in the grass below the eagle but could not be located after the eagle flew. The same afternoon a Crowned Eagle carrying the head and forelimbs of a duiker was followed from tree to tree through the *Hagenia abyssinica* forest at about 3 500 m elevation on the track to Koroborte and Koitoboss. Both eagles of a pair were seen with a nest containing one very white feathered chick in an African Pencil Cedar *Juniperus procera*. The young one must have been about ready to fledge for it was quite large and well feathered.

Lake Nakuru National Park: A pair of Crowned Eagles were waiting a chance to catch the goslings of a pair of Egyptian Geese *Alopochan aegyptiacus* at the back of the firewood pile of the Njoro Camp site on 5 May 1985. The eagles were not in a hurry but waited quietly in the lowest branches of a fever tree *Acacia xanthophloea* while the geese made a terrible racket.

A rumour that a leopard had been killed by the Olive Baboons has proved false. The caretaker of the Lake Nakuru Wildlife Clubs of Kenya Hostel has an exciting story of how the baboons chased the leopard into the hostel. About 6 p.m. on 4 May 1985 the leopard was relaxing in its tree at the junction to the tree lookout. Its left ear was torn but it looked healthy and came down after a long stretch and walked through the tall grass near the road so our students got a good view before it went into the bush.

We also watched a herd of about 100 Cape Buffalo *Syncerus caffer caffer* near the south end of the lake. The buffalo seem to be increasing in numbers in the

Lake Nakuru National Park.

The lake is so low that the hippopotamus are only half submerged at the Hippo Pools. Their backs were covered with dried mud and we saw two out walking along the shore in broad daylight.

Masai Mara Game Reserve: The 5th April 1985 must have been the middle of the widowbird breeding season, for there were at least five species of widowbirds displaying in and over the grass at Sanguiai, not far from the Ololulo Gate. Red-naped Widowbirds *Euplectes ardens*; White-winged Widowbirds *E. albonotatus*; Jackson's Widowbirds *E. jacksoni*; Yellow-mantled Widowbirds *E. macrourus* and Fan-tailed Widowbirds *E. axillaris* were joined by the Flappet Larks *Mirafra rufocinnamomea* with their noisy mating display flights.

At Lake Pirei, 9 km north of Kapsabet, a Black-chested Snake Eagle *Circaetus gallicus pectoralis* was observed soaring over the junction of the Kingwal and Pirei Rivers and the surrounding marshes where they become the Kimondi River. It dived into the reeds and came up with a Southeastern Green Snake *Philothamnus hoplogaster* in its beak. The eagle swallowed the snake as it soared over the lake and marshes and we watched the last of the tail disappear before it soared away from the area around us.

Larry Siemens, Adventist University of Eastern Africa, Box 2500, Eldoret.

Editor's Note: Dr Siemens has produced a list of birds identified at AUEA, Baraton, Nandi District and within a 5 km radius of AUEA. The list has been deposited in the Society Office at the National Museum, Nairobi where it may be consulted by interested members. It contains 255 species with confirmed and probable breeding species marked.

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THE STRANGE CASE OF THE WITCH DOCTOR AND THE COBRAS

It all started on a fairly normal afternoon on 16 April 1985, when I was in the Zoology Department Library. One of our technicians came in and said that two men wished to see me. I asked who they were. Police, he said. I quickly checked over what they might want, couldn't think of anything I'd done recently, and went out into the courtyard to find out. I found not two, but four policemen, five army soldiers, a couple of cars and one very dejected looking old man sitting in the rear of the pickup truck between two armed soldiers. I asked what they wanted of me. "To identify some snakes to see what they are and if they are poisonous" one of the policemen said. "Why?" I asked. "Because that old man is a witch doctor and one of his snakes bit and killed a young man of seventeen yesterday afternoon at Owino Market in Kampala" ... I asked them to take me to the witch doctor and I would identify the snakes. They said there were three of them. They had the witch doctor open up a wooden box with a padlock on it and when opened I saw in the box two quite large Egyptian Cobras *Naja hajae*, not found locally but common in northern and eastern Uganda. I said, "where is the third one?" and they asked the old man who rummaged around and found underneath the two giant cobras a small green bush snake *Philothamnus semivariegatus* a harmless and very abundant snake in the area.

I said, "I have told you what they are, now what else do you want?" The plain clothes detective said, "We want you to take the snakes and determine if they are poisonous." I said, "I have told you, they are Egyptian Cobras, each one of immense size and capable of killing a dozen or two men with their venom right now." The man insisted that I take them to my laboratory and "test them for venom" ... I refused, saying I'd take them to the laboratory but I had no way of keeping them alive - they would eat more rats than I could possibly

obtain for them, and anyhow, there was no easy way to accurately determine the toxic level of their venom without using up a lot of hard to get mice ... he seemed satisified with that but said "But will you please take them and do whatever you wish with them, but have them available when the trial of the witch doctor comes up." I asked when that would be but they were not sure, so maybe it will be in a couple of weeks or in late August 1993. I said I did not wish to keep them alive but would kill them and keep them for him in formaldehyde in a huge container. I said please tell the witch doctor that I am going to kill his snakes. He did that and the witch doctor sadly gave me the keys to his box.

But first, he put on a show for us. There must have been a crowd of 100 people or more by now, crowding into the courtyard of the zoology area. The witch doctor first got out the largest cobra, that I later measured as being 238 cm (7 ft. 7 inches) that he called "The Commander" because he could command it to do anything he wanted it to do. He told it to chase somebody and dropped it on the ground ... the crowd simply vanished and I was standing there by the witch doctor, not knowing what he had said in the native tongue, Luganda. But THEY did and made tracks for the next county. He just laughed and the poor snake, which I now saw was in a bad way, the skin peeling off in huge chunks and very emaciated, just laid there wishing it could be left alone. So the witch doctor loudly yelled another "command" to stay quiet and of course that is what the poor reptile did, till suddenly it reared up and made a big hood, turned towards the witch doctor who jumped back like he was going to be bitten and the snake crawled underneath the big wooden box, its home. People were yelling and screaming and jumping up and down all over the place. I just stood there beside him and couldn't believe what I was seeing. I knew that one of three things was happening - (1) the witch doctor had torn the snake's fangs out of its mouth, rendering it totally harmless: (2) He had gone through a lengthy process of making himself immune . . injecting himself with increasing large amounts of venom that he had extracted from the snake over a period of months: or (3) He was insane..... I figured that both (1) and (3) were quite likely, as I doubted if he had the knowledge and sophistication to attempt to do (2). Later I found that to be right.

Next, he pulled the second cobra out of the box, an inch at a time, tugging and making loud grunting noises as if he had to pull very hard to get it out ... coming out slowly inch by inch that way it seemed to take forever and was maybe 470 feet long. It was then that I knew, crazy or not, this man was a superb showman with few equals. He took this one out, a bit smaller, only 200 cm (6 ft. 7 inches) but still immense, and began scolding it, slapping it on the face while holding it up in front of him. He called this one "the askari" and asked it to lie still if he put it down, which of course it did, wanting nothing more than to go back into that nice dark box. Then he got out the third snake, the 60 cm (2 ft.) green one, which he called "the office boy" he said he carried it around mostly in his side pocket to kill off would-be pickpockets. He wrapped it into a ball and stuffed it into his side pocket to show how he kept it and it was all very hilarious to the crowd. They of course believed that it was a very dangerous snake that he had this marvellous control over.

When the crowd broke up and the police and soldiers had left with the poor old witch doctor in the pickup truck I took the snake box (no one would even h help me carry it to my office lab, saying that he might still have some sort of magic control over the snakes inside - I finally lost my temper and ordered one of the university graduate students to help carry it as it was large and heavy). A crowd of about 15 - 20 students, graduate students and technicians followed me inside. I cleared most of them out and then examined the snakes. I found that the largest cobra "The Commander" had no fangs. They had been yanked out by the witch doctor and I then knew how he could be so casual about handling this huge beast. Then I examined "The Askari" and it too had no fangs, having been pulled out by the witch doctor. I did not bother to examine "The Office Boy", the small green bush snake because it is totally harmless and lacks poison and poison

fangs. I measured the two large cobras, chloroformed them and put them forever to sleep.

I had been unable to follow much of the conservation going on over the last hour or so and had to be filled in on what had been going on. I asked how on earth could the young man be bitten by these cobras. I was informed that this witch doctor had been at the Owino market for many days and told people that he could cure them with things he had that he carried in a huge sack tied with a rope. I forgot to say that he had untied this bag and took out various things which he had shown us, drugs that he told us and the crowd would cure snake bite. One was a white powder that Mr Kitende, our systematic botanist, tasted and said was the dried sap of some tree, probably from one of the euphorbias. He asked in Luganda of the witch doctor how it worked and was told that the snake poison was in the stomach and that this "dawa" would cause the victim to throw up and thus get rid of the accumulated snake venom in his stomach. Another concoction was a mess of dried leaves or herbs, which he said he rubbed on the bite.

But I still don't know how on earth the boy got bitten in the first place, let alone to figure out how he died from the bite of a fangless cobra, unless he was gummed to death. I soon learned that too. The witch doctor sells his useless garbage at a considerable cost to the suckers, but the money doesn't come in quite fast enough that way. Maybe most of them figure that they wont ever get bitten by a snake, like maybe they wont get struck by lightening. So they don't buy. So, he has to have another "pitch" ... it's simple ... he tells them that if they will come up and let one of his cobras bite them he will gaurantee that they will not die because he will instantly give them the antidote ... but hold on, there is more ... he says once they recover, in a matter of seconds, they will suddenly be able to do almost anything. They will be so smart that they will soon be the richest person in Kampala, they will be so smart that if they are young they will be able to pass the Makerere entrance exams and in fact so smart that they may not even have to GO to Makerere because their marks will be so high they will be invited to become Makerere professors! I suspect if I'd heard that, even I might have given it the old one-two-three and let one bite me. I'm already a Makerere professor but it wouldn't hurt to be rich.

So, probably this poor boy decided that he would undergo this thing and become rich, powerful and good-looking and be almired by everybody. He must have stuck out his hand or arm and told the witch doctor to let the cobra bite him.. What happened next is unknown, but I suspect the old witch doctor opened up the mouth of "The Commander" and clamped it gently around the young man's hand or arm ... whereupon he probably instantly dragged it away, causing the many tiny teeth in the roof of the cobra's mouth to scratch him on the way way ...he looked down, said 'My GOD I've been bitten by a 100 foot cobra, ran off (he is known to have run away) to his own favourite witch doctor down the street, collapsed, turned blue and died of heart failure. He simply died of extreme fright and exhaustion.

It was really exciting to be right beside a real witch doctor who actually believed in the junk he had concocted and that it had value.

For days now I have been plagued with questions from students and others. I try to give them an answer to the best of my abilities. Here are a few of their queries:

Q. Can the witch doctor really control the snakes and will they obey his commands?

A. No, he cannot control them. The snakes have learned that he is not a threat to them, so they do not try to fight or strike out or get away from him. That is all.

Q. Can he, as he said, whistle to them and call them and they will come to him?

A. No. Snakes cannot hear very well if at all, having no external ears or ear drums. They can feel vibrations, however, especially on the ground from feet, etc., but even could they hear him whistle or call, or as has been said in India, the playing of a flute, they will not respond.

Q. I have heard that in India "Snake Charmers" can play on a flute and the snakes will "dance", is that true?

A. No, they do not dance, they simply rear up and spread their hoods and stand at bay. They are daring the man to come closer, a bluff, because actually they know him and probably would not actually strike out at him, plus he is usually heavily clothed in long flowing garments and the cobra's fangs would not reach his skin, but merely get caught in the fabric. Plus, the sound of the flute is to draw a crowd of *Homo sapiens*, who hear it and come to see the show and has nothing whatever to do with charming the snakes. But this is a constant story told in India, that cobras respond to the sounds made by human beings, will even sway and dance to the tunes!

Q. Do cobras have mates, and if the mate is killed will the cobra come and wreak revenge on the person that killed its mate by biting him and killing him?

A. That is another crazy snake myth originating in India. Cobras do not have mates, nor do any snakes. They meet, mate, then go their separate ways. Nor do they need to mate often because the sperm are stored in special sacs and a mated female may produce baby snakes for many years - the record is around 15, I think.

Q. The witch doctor said that he fed his cobras on maize flour. I thought snakes ate live food, like rats, birds, etc.

A. The witch doctor has long lost touch with reality or be able to tell the truth. For him, a lie is far more fun than the truth. Yes, snakes are total carnivores, eating only animals, birds, mice and rats, chickens, sometimes other snakes, etc.

Q. One of the policemen said it was true that they eat maize flour because he saw it all over the bottom of the box and also he bought some for the snakes.

A. The maize flour was on the bottom of the box to soak up the 'poo'. Snakes defecate just like everything does and the maize flour absorbs it. Plus, snakes tend to get anything on the floor in their mouths, and is the reason we do not keep snakes on sand. Perhaps they get hungry, and they fill their mouths (NOT stomach) with sand. Maybe the witch doctor saw maize flour from the floor on or in their mouths and he surmised that they were eating it.

Q. You say he tore the fangs out of the snakes ... will they grow back?

A. Usually snakes that have had that happen soon die, and the two cobras were not in good health and would have died soon ... they were emaciated and were shedding their scales in huge chunks, unlike the case with healthy snakes when it is shed all in one piece, starting with the lips, turning inside out, down over the body and off at the tail ... but actually, fangs constantly and all the other teeth (snakes including cobras have many teeth but only two fangs that carry the venom into the bite) are replaced constantly, in fact every time the snake moults its skin. Thus, to be safe the witch doctor would would have to periodically open the cobra's mouth, take a pair of pliers and tear out the fangs on each side.

Q. If the two cobras had no fangs, how could they have killed the boy?

A. Answer is we do not know. Possibly the boy died of extreme fright once he realised what he had done. Possibly, but only just barely possibly, the remaining teeth, the very tiny teeth in the palatine rows on the roof of the snake's mouth, scratched the skin of the boy and as the venom gland was of course not removed, perhaps some venom got on to his skin and soaked down in into the tiny scratches made by the tiny teeth, causing enough pain and swelling, etc., to further frighten the boy into thinking he was indeed poisoned; but I believe, not enough venom could enter that way to actually kill the boy. Though I cannot prove that.

Q. Where is the venom gland?

A. It is the large gland at the angle of the jaw in the same location as our own large parotid salivary gland. Muscular contractions can squirt venom down the fangs and into the tissues of the bitten person.

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SOCIAL ORGANIZATION OF THE AFRICAN ELEPHANT

SUMMARY OF A TALK GIVEN TO THE EANHS ON 10 JUNE, 1985

I began my study of the Amboseli elephants in September 1972 and it continues today with other researchers in the field. I chose the Amboseli population because it is one of the last relatively undisturbed elephant populations remaining in East Africa. The Amboseli elephants share their range with the Maasai people who are traditional pastoralists and as such do not hunt wildlife for food and only rarely kill animals. The Maasai still allow wildlife to wander over their ranches in wet season migration routes that have been used for at least the last 400 years. The Park is only 392 km², but the Amboseli elephants are able to use an area of over 1200². Thus although patterns are changing now, the elephants have neither been heavily poached nor compressed into a small protected area. This situation makes them ideal for study as they represent a natural population responding primarily to environmental pressures rather than predominantly to man-made pressures. In addition, the Amboseli elephants are extremely tolerant of vehicles making observation conditions excellent.

The Amboseli population presently consists of about 650 animals. This is small enough to know all the elephants individually. I recognise them by their ears, both by nicks and holes along the edges and by vein patterns, which are unique in the way that human fingerprints are. Detailed records of each elephant's associations over the years have been kept. These data reveal a complex social organization of many levels.

The basic unit of elephant social organization is the *family unit*, which has been described by others who have worked on elephants. The family unit consists of one or more related adult females and their immature offspring ranging in age from newborn to 11 - 15 years. On reaching sexual maturity females stay in the family and start to breed at 11 - 13 years of age. Young males leave or are forcibly ejected from the family shortly after reaching sexual maturity at 12 - 15 years. Family units are matriarchal in structure and there are strong bonds among female members. These bonds are manifested by the behaviour shown between individuals in a unit. They move close together; they feed side by side; they rest bunched together, touching; they lean on and rub against each other; they answer each other's rumbling vocalizations; and they greet in a special high intensity ceremony in which they click their tusks together, entwine their trunks, flap their ears and rumble, trumpet and scream.

The next level is the *bond group*. Most of the 50 family units in the population associate with one or more family units on a non-random basis. That is, certain families are found in association with certain other families far more frequently than with any other families in the population. Thus, if we take the EB family, a typical Amboseli family unit, we find that it associated with the EA family on 53% of its total sightings. The next closest association was with the SA family at 29%. Most of the other families in the population were found with the EB family in less than 15% of their sightings. When the EA and EB families are together they reveal their bonds by mixing in with each other, and moving, feeding and resting close together in a coordinated manner. And when these two groups come together the members greet in the same excited greeting ceremony that is used between members of the same family.

Above the level of the bond group is what I have called the *clan*. During the dry season when the groups concentrate around the permanent swamps, particular families return to particular areas. Thus the EA and EB families use the Longinye Swamp and the Ol Tukai Orok woodlands in the dry season. There are seven other families who also concentrate in this are in the dry season. I consider the groups that share the same dry season home range as a clan. I am not sure what the kin relations are within the clan, but it is

interesting that outside the bond group, clan members do not greet each other with the special ceremony.

The next level is the *sub-population*. There are two sub-populations in Amboseli: the "central" and the "peripheral". Of the 50 familes units there are 32 families that use the central swamp area during the dry season and 18 families who use the surrounding bushland and only use the swamp infrequently during the dry season. Members of the two sub-populations rarely associate during the dry season, and in fact, working in the central area I might not see some of the peripheral groups for months at a time.

The fifth and final level of organization is the population itself which consists of all the family units in both sub-populations for a total of 482 cows and calves and approximately 168 adult males.

Males live independently of their natal family once they leave at about 15 years old. From the time they are young calves, males spar with other calves, testing each other's strength. When two or more families associate the young males seek each other out and spar, By the time a male becomes independant he knows most of the other males of his age in the population. Although the dominance hierarchy may not be set at this point, the basis for it has been laid down. The frequent and vigorous sparring by the young males as they reach puberty may be a proximate reason for the adult females in the family to eject them. The ultimate reason is probably to prevent inbreeding. In any case, the young males gradually leave over a period of time, going off for a few days and weeks then coming back to the family, until finally they leave altogether. However, they do not leave the company of the cows and calves completely. Newly independant young males usually associate with family units who are not closely related. Young males can usually be seen tagging on to the end of a family or an aggregation of families. This pattern may go on for several years.

When a male reaches his late teens or early twenties he begins to spend less and less time with the cows and calves and more time in the areas favoured by all-bull groups. My colleague, Dr Joyce Poole, did a study of the bulls in the older age classes, and found that a definite pattern of behaviour, distribution and association was evident in these bulls. As a bull gets older he spends more and more time in the bull areas only emerging for a few months each year to associate with females. The largest and oldest bulls (those over 30 years) exhibit the phenomenon, well known in the Asian elephant, called musth.

Musth in the African elephant has only been discovered recently as a result of Joyce Poole's and my own long-term records of individually-known males in Amboseli. In the African elephant musth is very similar to that in the Asian elephant. Musth is characterized by the swelling of and copious secretion from temporal glands and a continuous discharge of urine accompanied by a strong odour. Males may be in musth for anytime from one day to five months. Older males are more regular in the timing and duration of musth; they tend to come into musth at the same time each year for two to three months, but not in synchrony with each other. When a male comes into musth he leaves his bull retirement area and seeks out females, testing them for oestrus and threatening any males he encounters. Both Joyce and I have found that musth males are apparently preferred by oestrous females as mating partners.

Thus male and female elephants live separate and different lives for the most part. As might be expected these differences are reflected in the development of calves. Another colleague, Dr Phyllis Lee and I studied the calves and noted that male calves grow faster and are more demanding of their mothers for milk. They spend more time seeking out and playing with other calves when they are older. Older female calves, on the other hand, spend time taking care of younger calves, especially newborn ones, something male calves were never seen to do. It is all practice for being an adult in the complex social life of elephants.

Cynthia Moss, African Wildlife Foundation, Box 48177, Nairobi.

RINGING NEWS

For some years the results from ringing birds by members of the Society have been rather disappointing, particularly in terms of recoveries from the Palaearctic. However, recently a letter was received from the Moscow Ringing Office containing details of seven recoveries of birds bearing Nairobi rings, these date back as far as 1978 up to last year, 1984.

They are, in order of ringing date:

Philomachus pugnax Ruff
Ringed 31.08.1978. 1st winter male. Aweil, Sudan,, 8°46'N, 27°24'E.
Recovered 22.05.1984. Toybokhoy, Suntarskiy region, Yakutian ASSR, USSR, 62°08'N, 116°51'E.

Anas querquedula Garganey
Ringed 11.11.1978. Adult male. Juba, southern Sudan, 4°52'N, 31°30'E.
Recovered 00.10.1982. Krutinskiy region, Omsk oblast, REFSR, USSR 56°04'N, 71°24'E.

Sylvia communis Whitethroat
Ringed 25.11.1979. 1st winter. Ngulia Safari Lodge, Tsavo National Park (West), Kenya. 3°00'S, 38°13'E.
Recovered Autumn 1981. Arskiy region, Tatar ASSR, USSR. 56°02'N, 49°51'E.

Motacilla alba White Wagtail
Ringed 15.11.1980. 1st winter. Suakin, Red Sea, Sudan. 19°08'N, 37°17'E.
Recovered 22.03.1983. Yaroslavl, Yaroslavloblast, RSFSR, USSR. 57°45'N, 39°40'E.

Luscinia luscinia Sprosser
Ringed 10.12.1980. 1st winter. Ngulia Safari Lodge, Tsavo National Park (West), Kenya. 3°00'S, 38°13'E.
Recovered 02.07.1981. Krolevetskiy region, Sumskaya oblast, Ukraina SSR, USSR. 51°36'N, 33°23'E

Philomachus pugnax Ruff
Ringed 16.01.1983. Adult female. Khartoum, Sudan. 15°33'N, 32°35'E.
Recovered 22.05.1983. Verkhnevilyiski district, Yakutian ASSR, USSR. 63°23'N 120°19'E.

Motacilla flava Yellow Wagtail
Ringed 24.03.1984. Adult female. Kariobangi, Nairobi, Kenya 1°15'S, 36°53'E.
Recovered 19.05.1984. Rudnyansk region, Volgograd oblast, RSFSR, USSR. 50°46'N, 44°39'E.

There is also a recovery of a Marsh Warbler *Acrocephalus palustris* ringed at Ngulia Safari Lodge, 23.11.1984. Recovered 07.05.1985 at Salalah, Southern Oman.

The whitethroat recovery is particularly pleasing as this is the first from many thousands ringed at Ngulia. The Sprosser, while not the first recovery of this species is the first from the breeding area in the USSR.

G.C. Backhurst, Ringing Organizer, EANHS. Box 24702, Nairobi.

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A VISIT TO MT. SUSWA

Mt. Suswa (or Susua) is one of a series of Quaternary (less than two million years old) volcanoes on the rift valley floor in the Nakuru-Naivasha-Kedong area. Having visited it for the first time on 15 June, I write this not only because Suswa is a wild, unspoilt and spectacular place, but also to relate a striking experience.

We left the B3 Narok road just west of the Longonot satellite communications station, and made off southwards across the floor of the Kedong Valley (part of the rift valley's floor) on a good dirt road. Recent rain had left a few shallow muddy patches and there was deep gulley erosion beside the track as we approached the volvanoe's lower slopes, but the permeable soils and rocks of the area had soaked up most of the moisture, leaving just enough to keep down the dust. The route up the outer slopes of Suswa's collapsed cone passes over often bare lavas and ash, and high clearance vehicles and four wheel drive were useful on some of the eroded sections.

We were fortunate in having the leadership of Dick Fordyce and so, instead of making directly for the spectacular inner crater, we turned south to the area of the lava caves. Unlike most of the caves in Europe, which are solution cavities in limestone, those in Suswa are tubes through which molten lava has flowed and drained away, leaving often lofty, vault-like tunnels up to hundreds of metres long. They are entered where weathering and erosion have breached their walls, or where their roofs have become unstable and collapsed.

Having heard that we would like to see some of the volcanoe's renowned bat (Chiroptera) colonies, Dick led us into a large partly collapsed tube. Instead of the calcareous stalactites, stalagmites and flowstone of the caves of south Wales, Somerset and the Peak District, the walls of Suswa's chasms are covered in many places with the intricate flow patterns of the ropey or pahoehoe lava that once flowed through them. One area was thick with presumed Baboon droppings, and African Rock Martins and Red-winged Starlings (the latter easily detected by their melodic whistling) flew around the gaping roof collapses (all English bird names taken from Britton, P.L. (ed.) 1980 *Birds of East Africa).*

Apart from a leaking tyre valve, the sole misfortune of the excursion was that, in our quest for bats, we had chosen the one cave in the area that had been used as a set for the motion picture *Sheena*. Polystyrene boulders, amorphous lumps of foam rubber and piles of fragmented woodwork from the film set littered the tunnel for a considerable distance and, in places, made the going underfoot even more treacherous. The view was expressed that, while it is unrealistic to expect baboons to clear away their wastes, it is disturbing to find film-makers at an apparently similar stage of mental and social development. However, remembering comment that the film itself attained such magnificent mediocrity as to actually achieve a presumably unintended degree of humour, perhaps all this mindlessly abandoned garbage fits into the picture.

Similar pollution has been wrought around the waterfalls in a Nairobi forest and, I seem to remember, in the Aberdare National Park. While it is obviously beneficial to have films made in Kenya, both in terms of publicity and foriegn exchange earnings, similar desecration of photogenic localities would certainly be detrimental to the main bulk of the tourist trade, whose clientele are searching for a wild unspoilt Africa.

However, the rubbish dump was the end of the bad news, and we moved on into an impressive experience. The large tunnel wound on, collapse holes in the roof ceased, and we were in darkness. While there was no danger of breaking our heads against the lofty roof, the floor of the cave was often of loose boulders and sand, and unsure underfoot. I kept shining my torch upwards in search of bats but its powerful beam, even on fresh batteries, hardly reached the cavern's roof. But Dick led us on and, at last, there was a hopeful and increasing stench from the bats' droppings, and an ever increasing babble of chirping and

chattering from the creatures themselves.

We stopped and peered at the vault above, but still could not discern its occupants. Then, as more torches and in particular a more powerful spotlight arrived, an astounding sight opened to view. The roof above us was alive with hundreds of densely packed, wriggling bats. Viewed with the aid of the spot light and binoculars, the individual bats could easily be seen, peering down at us with small eyes from under grotesquely enlarged ears. The darkness, the stench, the continual twittering cacophony and the packed bodies writhing above us all made an unforgettable spectacle: a jabbering, hideously enthralling mass of fiends at the cavernous gates of some stinking medieval hell. I cannot remember being so impressed by a non-avian phenomenon since visiting the Mountain Gorillas *Gorilla gorilla berengei* on the Virunga Volcanoes of Rwanda (*EANHS Bulletin* 1981: 86-91).

Because of their unique patterning, we could identify most of the individuals above us as the Giant Free-tailed Bat *Otomops martiensseni*, which Williams (1967: *A Field Guide to the National Parks of East Africa.*) states to be common in Suswa's lava tubes. With the aid of binoculars and spotlight, we could clearly make out the vivid white collar on each bat's hind neck, and the similar edging to the dorsal torso. Even the free (i.e. not connected to the body by a membrane), mouse-like tail was visible. A freshly dead individual was found on the cave's floor.

After this memorable experience, we retraced our route and drove into the volcanoe's caldera. Maasai manyattas were scattered over this crater's extensive floor, the grass was tall and lush, and game included Masai Giraffe, Kongoni, Grants Gazelle and Thomson's Gazelle. Birds were few. The anticipated stark, towering and precipitous cliffs of the 'lost world' of Suswa's inner cone are, in fact, mostly vegetated and although a few perches covered in white droppings were visible, hopes of Lammergier were reduced. A pair of Verreaux's Eagles were the sole cliff-nesting birds seen. Also, while the map showed forest on top of the central cone, the vegetation is in fact Giant Euphorbia *Euphorbia ingens* so that thoughts of highland forest birds were also lessened. A Red-chested Cuckoo was heard in this area.

Two areas of standing water from the recent rains remained on the crater floor, and one held a pair of Hamerkops, far from any suitable nest site. Birds of the dry caldera floor included a Two-banded Courser (at the northern limits of it's Kenyan range), a pair of Little Bee-eaters, Fischer's Sparrow Larks, and a Capped Wheatear. Our vehicles flushed many larks, cisticolas and pipits but, unfortunately, there was no time to stop and get to grips with them. A dark-phase Augur Buzzard carried an unidentified snake to the vicinity of a pale phase bird perched on the caldera's wall.

We left Suswa a little later. Both in terms of scenery and bats it had been a spectacular day, in a beautiful, wild locality.

Adrian D. Lewis, African Birding Ltd., Box 25296, Nairobi.

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KENYA BIRD ATLAS: REQUEST FOR INFORMATION

Does anyone have or know of a confirmed breeding record for the Lead-coloured Flycatcher *Myioparus plumbeus* from atlas square 100B ? This is the square that contains Lake Chala, Taveta and Kitovu Forest. Any data, e.g. date, place, breeding activity seen would be most useful.

Adrian D. Lewis, African Birding Ltd., Box 25296, Nairobi.

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THE MAY BIRD WALK OF THE UGANDA EANHS

On Saturday morning 25 May, ten people met at the Entebbe Road Clock Tower, eager to participate in the monthly morning bird walk of the Uganda branch of the EANHS. The trip leader was Ebbe LaCour. Our destination was the Lake Victoria shoreline near Kaazi on Murchison Gulf, following the Nsambya Road by Nsambya Hospital around Tank Hill and on to the lake.

We stopped briefly en route to glimpse various species on wires such as Woodland Kingfisher, Black Flycatcher and Ruppell's Long-tailed Glossy Starling, Pied Wagtails and Broad-billed Roller. At the lakeshore our first birds were a small flock of White-collared Pratincoles flying about and resting on the boats near the shore. The pratincoles are among the most visible birds on the Nile just below Murchison Falls but are always a real treat when seen on Lake Victoria, so the morning trip had started out with a bang. In the next hour or so we saw or heard 44 species of birds.

In the air were Striped Swallows and Angola Swallows, Pied Kingfishers and a flock of Knob-billed Duck, while from the lakeshore calls of the Black-headed Oriole, Winding Cisticola, Fish Eagles and Didric Cuckoos gave a feeling of East Africa to the scene, embellished by the rhythmic song of a Blue-spotted Wood Dove and the raucous calls of noisy Hadadas.

After an hour by the lakeshore we headed up Busiga Hill towards Ebbe La Cour's hilltop aerie, stopping on the way in several places to get out and hike around. Notables were the Black and White Casqued Hornbills, Red-shouldered Cuckoo Shrikes, Laughing Doves, Eastern Grey Plantain-eaters and Splendid Glossy Starlings. After climbing the road (if that is the correct word) that wound back and forth upward, almost vertically at times, we reached LaCour's lovely mountaintop villa and settled down for tea and cakes and to look out of the windows for raptors, then hiked around the steeply sloping garden to look at the many varieties of orchids hanging among the trees. It was a delightful trip, ending all too quickly.

John D. Goodman, Box 7062, Kampala.

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